Information
Systems
Program
(ISP)

Information Systems Planning Report

Wholesale Distribution Sector

INPUT®

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INFORMATION SYSTEMS PLANNING REPORT

WHOLESALE DISTRIBUTION SECTOR

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I

Major Issues

I

Major Issues

The distribution of materials and products—from the harvesting of natural resources through various manufacturing processes, and finally to end users—is a complex process that has a profound impact on our quality of life. The complexity of the process begs for automation, but also makes implementing a truly effective integrated automation system for distribution very difficult.

Revenue from industry-specific information services sold to wholesale distributors (SICs 50 and 51) grew 14% from 1986 to 1987, and INPUT forecasts a five-year average annual growth of 13% through 1992. This five-year rate is a percentage point below INPUT's forecast of the five-year growth rate for all industries combined. There is great potential for automated systems in wholesale, but for a variety of reasons IS managers in this industry have been hesitant to make the investment required to implement effective systems. This trend is changing with the consolidation of the industry, and computers are an increasingly important tool for providing the kinds of services retailers demand.

This report looks at the reasons some IS managers have been hesitant to invest in new or expanded information systems, as well as the reasons other IS managers think information systems are essential for their companies' survival and growth. It also includes a brief analysis of IS budgets and a look at computer applications and the impact of technology on the wholesale industry.

A

Driving Forces

There are a number of forces driving wholesalers away from automation, as well as forces driving them toward automation. First those forces preventing increased automation:

- Profit margins in wholesale are generally quite low—around 2-3%—so wholesalers consider large capital investments very carefully before taking risks. More than half of all wholesalers bring in less than $1

million in revenue each year, so they simply don't have the economies of scale from which large chains benefit. It should be noted, however, that the wholesale industry is in the midst of a consolidation, and the proportion of firms that can afford to automate is increasing.

- Technology for the retail and wholesale industries tends to feed on itself. Retailers who are careful about minimizing inventory pass the cost of storing inventory back to the wholesalers, who must in turn improve the efficiency of their inventories while maintaining a reasonable level of customer service (few stock-outs). One way to minimize inventory is to collect precise sales data from the retailers, use the data to create accurate sales forecasts, and keep only enough inventory to satisfy projected demand and to allow for a margin of error. Both retailers and wholesalers must be automated to achieve useful forecasts: retailers must have point-of-sale (POS) systems to collect sales data, and wholesalers must be automated to analyze the data for forecasting. Other applications, such as electronic data interchange (EDI), require both retailers and wholesalers to be automated.

- This interdependence has caused rapid leap-frogging growth in automation for large retail chains that provide distribution services to their own stores. Small, independent retailers and wholesalers, however, have been slow to implement automation because their low profit margins cannot support the capital investment necessary to get started.

Companies that decide they can afford to invest in automated systems do so for the following reasons:

- The cost of maintaining stored inventory is generally acknowledged to be the highest single cost incurred by wholesalers. Automated inventory control systems can track inventory closely, and can help reduce inventory levels and turnaround time. Automated data entry systems, such as laser scanners or optical character recognition (OCR) devices, reduce data entry errors. This increase in accuracy reduces inventory levels still further by reducing the margin for error.

- The paperwork involved in receiving, processing, and delivering an order is overwhelming, and each time someone copies an order or enters it into a new system there is an opportunity for error. Many IS managers have plans to evaluate or implement electronic data interchange (EDI) within the next five years. EDI reduces the volume of paperwork by putting purchase order forms and other paperwork into an electronic format. Information can then be easily transferred from one form to another without re-entry. This transfer bypasses manual data entry and eliminates numerous opportunities for error.

- In a few cases, IS departments use information systems to provide additional services to their customers. These services might include analysis of sales data to help customers decide on size and frequency of orders, or might include actually providing computers, software, or consulting. The more services wholesalers provide, the more likely their customers are to be long-term, repeat customers.

Exhibit I-1 summarizes the forces driving automation for wholesalers.

EXHIBIT I-1

WHOLESALE DISTRIBUTION—DRIVING FORCES

- Low profit margins
- Interdependence of retail and wholesale technology
- Potential for reducing inventory levels
- Potential for improving customer service

B

Issues and Objectives

The fundamental objectives of every wholesaler are to find reliable repeat customers, and to minimize inventory costs. The IS department plays an important role in pursuing both of these objectives.

As mentioned earlier, the cost of holding inventory is a wholesaler's largest single cost. Wholesalers must balance this cost against the value of avoiding stock-outs. The balance between these two determines the level of inventory to keep on hand. In addition, wholesalers must maintain a margin for error to allow for data-entry errors, damaged or lost goods, errors made by shippers or suppliers, and lag between the time orders are placed and the time stock-on-hand is updated in the computer.

It is essentially impossible to maintain an absolutely accurate count of stock-on-hand, and it is also essentially impossible to achieve the fabled just-in-time (JIT) inventory system. Under the ideal JIT system no inventory is held. Instead, shipments arrive just in time to be shipped off to satisfy customer orders. The number of unpredictable variables is too great to make JIT feasible, but distributors and manufacturers use it as an ideal to guide the direction of inventory management. More than 90% of

the wholesalers INPUT spoke with have plans to upgrade existing systems or implement new systems that will improve control of inventory and reduce the levels of stock-on-hand.

Accurate sales forecasting and a minimal number of data-entry errors help wholesalers keep inventory levels low. Every wholesaler uses sales forecasting of some sort to help determine inventory levels, but none of our interviewees mentioned sales forecasting as an area of concentration for improvement over the next several years. Instead, interviewees are focusing on streamlining order processing and eliminating errors.

- IS managers cited two particular ways they plan to do this: 1) EDI and 2) Bar coding/scanning. (See Impact of Technology and Applications for further discussion of these applications.)

IS managers address the other major wholesale objective—attracting consistent customers—by offering not only goods for sale, but also an array of services to help customers improve their competitive positions. Increasingly, this array includes computer services. More than half the wholesalers INPUT spoke with provide computer services of some sort. Approximately 23% of the companies interviewed provide sales analysis or other batch applications as peripheral services. Sixteen per cent provide point-of-sale systems or software, and 15% provide comprehensive automation systems and custom consulting. The wholesaler's objective is to provide its customers with an entire package of products and services that will make the wholesaler an indispensable aspect of the customer's business. This indispensability will guarantee a steady stream of orders, and will make it difficult for the customer to switch to a different supplier.

Exhibit I-2 lists some of the main objectives of IS departments in the wholesale distribution industry.

EXHIBIT I-2

WHOLESALE DISTRIBUTION—OBJECTIVES

- Minimize inventory levels
- Implement or update core inventory control system
- Implement or evaluate EDI
- Implement or evaluate bar-code scanning
- Offer data processing services to customers

There are a number of issues that IS managers must deal with in pursuing the objectives discussed above. There are also a number of persistent general issues associated with automation for wholesale.

The lack of protocol and format standards for EDI has both positive and negative implications for wholesalers. On the positive side, nonstandard protocols make it difficult for retailers to switch from one supplier to another because the switch may involve retraining order-entry personnel, or replacing equipment to adapt to a new supplier's protocol. However, it is precisely the lack of standards that keeps retailers from accepting EDI. As one retailer said in an interview with *Stores* magazine, "We don't want to support a couple hundred protocols. We want to support a particular protocol and a particular format so we can communicate with all vendors the same way." Unless retailers accept EDI, wholesalers cannot reap its cost-cutting benefits, or the customer-retaining benefits.

Wholesalers can offer ordering through EDI and can recommend its use to their customers, but ultimately the choice to use it or not lies in the hands of retailers.

There is a significant effort afoot to standardize EDI protocols and formats. At least fifteen different agencies and associations are involved in developing the standards. Perhaps the large number of groups involved is an indication that we are still a long way from having useful standards.

Wholesalers also hesitate to offer the kinds of computer services that will attract consistent customers because offering such services involves considerable investment in equipment and personnel. Because of low profit margins, the wholesaler must have very high confidence in the power of such services to attract and hold customers before risking the investment.

Other issues mentioned by IS managers in wholesale include the complexity of the tasks to be automated. Wholesale distribution is a many-faceted operation that requires great precision for maximum efficiency. The interplay among all these facets makes it very difficult to automate the process in an effective, integrated way.

The most commonly mentioned day-to-day issue among IS managers in the wholesale industry is training for end users, and the fact that technology advances more quickly than end users can make use of it.

Exhibit I-3 lists the main issues mentioned by IS managers in the wholesale distribution sector.

EXHIBIT I-3

WHOLESALE DISTRIBUTION— ISSUES

- Standards for EDI
- Cost of offering computer services to customers
- Complexity of distribution
- End-user training

C

Impact of Technology

The degree of automation among wholesalers varies greatly with the size of companies. Low profit margins make it difficult for small wholesalers to afford effective automation, but the benefits of automation, for those who can afford it, are substantial. For this reason there is a steep increase in the degree of automation with increase in revenue.

Wholesalers of small items have been taking advantage of bar-coding technology for quite a while, but taking advantage has been more difficult for wholesalers of large items that cannot be passed over a stationary laser scanner. The introduction of viable portable scanners in the last few years has made scanning an option for wholesalers of large and small items. Scanning makes recording information on items very easy and very fast, and reduces the number of data-entry errors associated with keying in information manually.

Perhaps the most significant impact of technology on wholesale is to greatly improve the services that wholesalers can provide to their customers, thus making service an important criterion for competition among wholesalers. Independent retailers must compete with chains whose central offices provide them with POS systems, sales analysis, store layout consulting, and other services. Independent retailers look to their suppliers to provide these services, and if one wholesaler cannot provide them, the retailer will find another supplier who can. Thomas Fields, CEO of McKesson, confirms the importance of service to independents in an interview with *California Business*, March, 1988: "We serve chains, but we serve a lot of independents, too. Our services will mean more to him than [price] discounts."

Wholesalers can use this dependence on service to their advantage. After having attracted a new customer, a wholesaler can help assure continued business by providing the customer with software, hardware, or complete system design and integration. Once customers are accustomed to conducting business as influenced by the supplier's system, they will have to change their way of doing business if they want to change suppliers.

Electronic data interchange (EDI) contributes to reduced costs of doing business in wholesale by simplifying order processing. "...we expect a 7-14 day reduction in the order cycle by eliminating manual processing and mail lag," says Carlan Crossono, director of special projects for Service Merchandise in an interview with *Distribution*, June 1987. EDI also can help reduce inventory because it reduces errors in order processing. Also in *Distributing,* Wal Mart reported a 17% reduction in inventory due to this aspect of EDI.

Exhibit I-4 summarizes the impact of technology on the wholesale distribution industry.

EXHIBIT I-4

WHOLESALE DISTRIBUTION— IMPACT OF TECHNOLOGY

- Tighter control of inventory
- Improved customer service
- More solid bond between customer and supplier
- Reduced order-processing time

II

New Applications

II

New Applications

Inventory control is the hub of an integrated wholesale system. The timing and accuracy of updates to stock-on-hand are crucial. EDI and bar-coding/scanning, the most important new applications of the last several years, derive their value from the way they refine the accuracy of inventory control.

Electronic Data Interchange (EDI) is the electronic transfer of purchase order forms and other business forms. A retailer can sit down at a terminal and fill out an order form on the screen of a PC. Then the retailer can send the form directly to a wholesaler's computer via phone lines or dedicated transmission lines. If EDI is implemented to its fullest extent, every aspect of order processing can be done electronically: from the original purchase order to bills of lading and invoices. It is possible for information to be transferred from document to document without ever having to be re-entered. This convenience all but eliminates data-entry errors and problems with illegible writing after the order leaves the retailer.

Since most computer systems for wholesale update stock-on-hand somewhere along the order-processing path, the impact of EDI on the accuracy of inventory control can be significant. The fact that the market for EDI is growing at 88% per year despite a lack of standards is an indication of the value businesses place on this technology. Approximately 54% of the wholesalers INPUT interviewed are using EDI or plan to implement it within the next five years.

Bar-coding/scanning is even more popular than EDI among wholesalers. Sixty-two percent of INPUT's respondents are currently using bar code scanning, or plan to implement it within the next five years. Bar code scanning is particularly popular now because of the recent introduction of viable portable and hand-held scanners. Wholesalers can use these scanners in their own warehouses to maintain inventory, or they can provide the scanners to retailers as part of an automation package. In

conjunction with a minicomputer or PC, these small scanners can be set up to maintain records on inventory levels, and will automatically order replenishments when stock reaches a certain level. Like EDI, the value of bar code scanning is primarily that it minimizes errors and therefore yields closer control of inventory.

Expert systems are the applications of the future for wholesale. They are ideally suited to making decisions or recommendations based on a large number of criteria. A perfect example of such a task is deciding when and how much of an item to order, and how much stock to keep on hand. Conceivably, an expert system could take into account seasonal sales variations, long-term trends, short-term trends, recent product developments, the economic climate, and a myriad of other criteria in helping decide on size and frequency of orders.

Only one of the wholesalers INPUT spoke with expressed any intention to implement expert systems, but this wholesaler plans to have a system in place in 1989 or 1990. Like bar coding and EDI, expert systems refine inventory control—the core of the distribution system.

Exhibit II-1 lists some of the new applications wholesalers are implementing or evaluating for the future.

As a group, wholesalers obtain their applications software from the following sources:

- 85% in-house development
- 3% outside custom software development
- 6% modified software packages
- 6% off-the-shelf software packages

Exhibit II-2 shows the sources from which wholesalers obtain applications software.

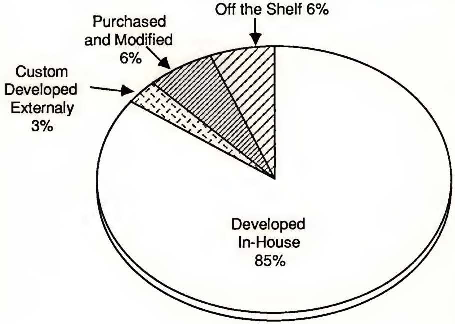
EXHIBIT II-1

WHOLESALE DISTRIBUTION—NEW APPLICATIONS

- EDI
- Bar-code scanning
- Expert systems for inventory control

EXHIBIT II-2

WHOLESALE DISTRIBUTION—SOURCE OF APPLICATIONS SOFTWARE



III

Budget Analysis

III

Budget Analysis

IS budgets in the wholesale distribution industry are growing approximately 11% per year. This healthy rate may indicate the beginning of a catch-up period, since wholesalers have traditionally been a bit slow to automate.

Exhibit III-1 summarizes the distribution of 1987 IS budgets in the wholesale distribution industry, and anticipated changes for 1988.

The IS managers INPUT interviewed indicated that all but one area of the budget are growing at approximately the same rate: between 10% and 13%. The one exception is communications, which is growing at 21% per year. This increased rate reflects the increasing use of EDI and the importance of communications between wholesalers and their customers. The rapid increase in spending for communications also reflects the value large wholesalers place on communicating among their branch locations.

Personnel is the largest single item in the budget, accounting for 43% of the total.

Hardware is the second largest item, claiming 22% of the budget. Mainframe processors account for the biggest chunk of hardware, with 18% of the total budget.

All the IS managers INPUT spoke with—with one exception—plan to increase spending on information services in 1988. The lone exception is a company that recently divested part of its operation, and therefore will see a large decrease in the IS budget in 1988. This company was not used in figuring overall budget distributions and growth rates.

EXHIBIT III-1

1987 BUDGET DISTRIBUTION AND 1987/88 CHANGES IN THE WHOLESALE DISTRIBUTION SECTOR

Budget Category	1987 Percent of IS Budget	1987-1988 Expected Growth (Percent)
Personnel Salaries and Fringes	43	11
Mainframe Processors	18	12
Minicomputers	2	10
Microcomputers	2	13
Other Hardware	*	10
Total Hardware	22	12
Communications	3	21
Applications Software	5	12
Systems Software	3	12
Professional Services	1	11
Software Maintenance	7	10
Hardware Maintenance	7	11
Other	9	11
Total	100	11

About INPUT

INPUT provides planning information, analysis and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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